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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/614,652 | 07/07/2003 | George Cintra | 08935-216002 | 7512 |
| 26161 | 7590 | 08/24/2004 | | |
| FISH & RICHARDSON PC | | | EXAMINER | |
| 225 FRANKLIN ST | | | BAREFORD, KATHERINE A | |
| BOSTON, MA 02110 | | | | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1762 | |

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|------------------------|---|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/614,652 | CINTRAL ET AL.  |
| | Examiner | Art Unit |
| | Katherine A. Bareford | 1762 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 16-22 and 51-64 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 07 July 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All
 - b) Some *
 - c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>7/03</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The preliminary amendment filed with the application has been received and entered.

Claims 1-15 and 23-50 have been canceled, leaving claims 16-22 and 51-64 present for examination.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The spraying of the electrolyte should be mentioned.

3. The disclosure is objected to because of the following informalities: (1) at page 3, last 2 lines, "3-3E" should be "3, 3A, 3B, 3C, 3D and 3E". (2) at page 4, lines 1-2, "4-4F" should be "4, 4A, 4B, 4C, 4D, 4E and 4F". (3) at page 4, lines 3-4, "5-5B" should be "5, 5A and 5B".

Appropriate correction is required.

4. The attempt to incorporate subject matter into this application by reference to 09/280,367 (page 8, 2nd paragraph) and 09/358,578 (page 9, 2nd full paragraph) is improper because applicant has not indicated that the references are published or

commonly assigned. The Examiner also notes that it should be indicated that 09/280,367 is now abandoned and 09/358,578 is now U.S. Patent No. 6,342,317.

Claim Objections

5. Claims 16, 17, 22, 54 and 63 are objected to because of the following informalities: (1) in claim 16, a substrate should be provided to indicate what the electrolyte is being applied to. (2) in claim 17, line 1, after "droplet size", -- of the spray -- should be inserted to clarify that the droplet size refers to droplets in the spray. (3) in claim 22, line 1, "any one of" should be deleted, since only one claim is referred to. (4) in claim 54, line 2, "PVA" should be spelled out to clarify what material is being referred to. (5) in claim 63, it should be clarified that the "vibratory nebulizer" provides the spray.
- Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. Claims 16-19, 22, 51-57 and 59-64 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for spraying an electrolyte/separator material on an inside surface of a battery separator/cathode which has already been placed in a battery can, does not reasonably provide enablement for the other methods claimed. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The only invention described in the specification is the spraying of an electrolyte/separator material on an inside surface of a battery separator/cathode which has already been placed in a battery can. Applicant has provided not teachings or suggestions as to how the other inventions claimed could be practiced without undue experimentation by one of ordinary skill in the art. For example, it is unclear if the spraying of claim 16 would work if it was not applied to a specific substrate or in the confines of the battery can, without performing undue experimentation by testing all possible surfaces or application methods.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 16-19, 22, 53-63 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 5-6, 8-10 and 14-18 of U.S. Patent No. 6,589,612 ('612). Although the conflicting claims are not

identical, they are not patentably distinct from each other because '612 provides claims that meet all the feature requirements of the claims of the present application, and also require other features not prevented by the claims of the present application. For example, claim 6 of '612 provides all features required by claim 16 of the present application.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 16 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Japan 1-159964 (hereinafter '964).

Claim 16: '964 teaches a method for applying electrolyte in the manufacture of a battery, where the electrolyte is applied to a separator in the form of a spray. See the abstract.

Claim 19: a separator is provided and the electrolyte material is applied to the separator. See the abstract.

Claim Rejections - 35 USC § 103

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11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 17, 22 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over '964 as applied to claims 16 and 19 above, and further in view of Hope et al (US 4888206).

'964 teaches all the features of these claims except the droplet size and the use of the vibratory nebulizer.

However, Hope teaches a method for applying a material to a substrate in a process of manufacturing a battery. Column 1, lines 5-20 and column 2, lines 15-25. The material is applied to the substrate in the form of a spray generated by a vibratory nebulizer. Column 5, lines 45-68 and column 2, lines 15-25. Hope teaches that the droplet size is less than 20 microns. Column 6, lines 5-15.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '964 to use a vibratory nebulizer as described by Hope in

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order to provide the spray with an expectation of desirable coating results, because both '964 and Hope teach spraying material for battery purposes and Hope teaches that a desirable method of forming fine spray drops is a vibratory nebulizer. This vibratory spray method would provide the droplet size of less than 20 microns.

14. Claims 18 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over '964 in view of Hope as applied to claims 17, 22 and 51 above, and further in view of Sono-Tek Technology Overview.

'964 in view of Hope teaches all the features of these claims except the spray velocity

However, Sono-Tek teaches that when using ultrasonic atomizing nozzles, a low velocity spray of 3-5 inches/second can be provided. Page 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '964 in view of Hope to use a low velocity flow as described by Sono-Tek with an expectation of desirable coating results, because both '964 in view of Hope and Sono-Tek teach spraying material with nebulizers and Sono-Tek teaches a conventional desirable spray velocity when using nebulizers.

15. Claims 16, 19-21, 53, 55-62 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reichert et al (US 6203941) in view of the admitted state of the prior art and Japan 1-159964 (hereinafter '964).

Reichert teaches a method for applying a material (a separator) in the manufacture of a battery. Column 2, line 45, through column 3, line 20. The material can be applied as a spray. Column 4, lines 15-25. The material can be a film forming separator material. Column 4, lines 20-40. A cathode can be provided. Column 3, lines 1-5 and column 4, lines 15-25. The film forming material is applied to at least a portion of the cathode. Column 3, lines 1-5 and column 4, lines 15-25. The cathode is placed in a battery can prior to applying the film forming material. Column 3, lines 1-5 and column 4, lines 15-25. The spray can be provided by inverted can spray coating, wherein the coating composition is sprayed vertically upwardly in to an inverted battery can containing a cathode. Column 3, lines 1-5. The system can have at least two components. Column 6, lines 45-60 (for example) and also column 7, lines 5-20. These components can be applied simultaneously as a spray. Column 4, lines 15-25. The components are separate to the extent that the two components are two different materials before they are combined to form the "simultaneous" spray. The surface can be an elongated cavity in the container. Figures 1-3 and column 3, lines 20-30. The surface can be cylindrical. Column 2, lines 50-55 and figures 1-3. The surface can be non-cylindrical. Column 2, lines 50-60.

Reichert teaches all the features of these claims except (1) the spraying of the electrolyte on the separator, (2) the avoiding of the pooling (claim 21), (3) applying a film forming material with the electrolyte (claim 53), (4) the sequential/simultaneous application (claims 55,56), (5) the electrolyte on the cathode (claim 57), (6) the

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undulating lobe (claim 62) and (7) rotating the container during application of electrolyte (claim 64).

However, the admitted state of the prior art, at page 1 of the specification, teaches that in the manufacture of batteries it is common to start with a cylindrical can to which is first added a ~~pelletized~~ cathode material in the shape of an annulus. A separator is then placed against the surface of the cathode inside the annulus. The separator made by a preformed cylindrical sheet or may be a material that is applied as a liquid and then forms a stable film. A small precharge of electrolyte is then added to wet the separator. The precharge is poured in the annular opening defined by the separator and forms a small pool at the bottom of the can from which it wicks into the separator after a period of time.

'964 teaches a method for applying electrolyte in the manufacture of a battery, where the electrolyte is applied to a separator in the form of a spray. See the abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Reichert to spray apply electrolyte to the separator on a cathode in the battery can as suggested by the admitted state of the prior art and '964 in order to provide a desirable electrolyte application, because ~~both~~ Reichert teaches a desirable method of manufacturing a battery includes spray application of a multicomponent separator onto a cathode in a battery can, and the admitted state of the prior art further teaches that it is need to provide an electrolyte material to wet this separator and '964 teaches that a desirable method of applying electrolyte to a separator is by spraying. Given the teaching of Rechart of applying the separator material by

spraying, it would be desirable to continue this spray application by applying the electrolyte simultaneous with the separator (since the electrolyte is to be impregnated in the separator anyway) or sequentially. It would further have been obvious to provide the spraying of the electrolyte using the inverted can position of Reichert with an expectation of desirable coating results, which would also prevent pooling of the spray in the bottom of the can, since this spray method is suggested as desirable positioning by Reichert. It would further have been obvious to use an undulating lobe surface in the battery container with an expectation of desirable coating results, because Reicher teaches that non-cylindrical shaped batteries can be coated (column 2, lines 50-60) and it is the Examiner's position that undulating shaped cathode surfaces are well known in the battery art. It would further have been obvious to rotate the surface while spraying so as to fully coat all surfaces, since it is the Examiner's position that it is well known when spraying interior surfaces to rotate the surface while spraying to fully cover all areas.

16. Claims 17, 22, 51 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reichert in view of the admitted state of the prior art and '964 as applied to claims 16, 19-21, 53, 55-62 and 64 above, and further in view of Hope et al (US 4888206).

Reichert in view of the admitted state of the prior art and '964 teaches all the features of these claims except the droplet size and the use of the vibratory nebulizer.

However, Hope teaches a method for applying a material to a substrate in a process of manufacturing a battery. Column 1, lines 5-20 and column 2, lines 15-25. The material is applied to the substrate in the form of a spray generated by a vibratory nebulizer. Column 5, lines 45-68 and column 2, lines 15-25. Hope teaches that the droplet size is less than 20 microns. Column 6, lines 5-15.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Reichert in view of the admitted state of the prior art and '964 to use a vibratory nebulizer as described by Hope in order to provide the spray with an expectation of desirable coating results, because both Reichert in view of the admitted state of the prior art and '964 and Hope teach spraying material for battery purposes and Hope teaches that a desirable method of forming fine spray drops is a vibratory nebulizer. This vibratory spray method would provide the droplet size of less than 20 microns.

17. Claims 18 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reichert in view of the admitted state of the prior art, '964 and Hope as applied to claims 17, 22, 51 and 63 above, and further in view of Sono-Tek Technology Overview.

Reichert in view of the admitted state of the prior art, '964 and Hope teaches all the features of these claims except the spray velocity

However, Sono-Tek teaches that when using ultrasonic atomizing nozzles, a low velocity spray of 3-5 inches/second can be provided. Page 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Reichert in view of the admitted state of the prior art, '964 and Hope to use a low velocity flow as described by Sono-Tek with an expectation of desirable coating results, because both Reichert in view of the admitted state of the prior art, '964 and Hope and Sono-Tek teach spraying material with nebulizers and Sono-Tek teaches a conventional desirable spray velocity when using nebulizers.

18. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reichert in view of the admitted state of the prior art and '964 as applied to claims 16, 19-21, 53, 55-62 and 64 above, and further in view of EP 898 316 A1 (hereinafter '316).

Reichert in view of the admitted state of the prior art and '964 teaches all the features of this claim except the use of PVA.

However, '316 teaches the formation of separators for batteries. Page 4, lines 50-55. The separator comprises a porous base, such as a porous film, and an organometallic compound applied to the base. Page 4, lines 50-55. The porous film can include PVA, polyvinyl alcohol. Page 6, lines 35-45. The PVA can be applied by spray coating or the like to the porous base. Page 9, lines 35-55. Sequentially the organometallic compound can be applied by spraying to form the separator. Page 11, lines 40-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Reichert in view of the admitted state of the prior art and '964 to use PVA as a separator component as described by '316 with an expectation of

desirable coating results, because both Reichert in view of the admitted state of the prior art and '964 and Hope teach separators for battery purposes and '316 teaches that a desirable method in separators is PVA.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:30-4:00) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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PRIMARY EXAMINER